

phoria; you will understand that this is not a case of true heterophoria. Another point we must not overlook, is the fact that apparent heterophoria is often associated with errors of refraction, and disappears when these errors are corrected by suitable glasses.

But after all these cases have been carefully sifted out, there still remains a certain number (like the cases reported in this lecture) in which the most searching examination can detect no other disturbance in the eye but heterophoria, and in which the correction of this muscular disturbance is promptly followed by the complete relief of existing disturbances in the nervous system. I wish to impress this fact upon your mind with particular emphasis, because some writers, utterly disregarding these clinical facts, are trying to make their readers believe that heterophoria has no bearing on asthenopia or nervous symptoms, but that these complaints are always caused by anomalies of refraction, and relieved by the correction of the refractive errors.

NOTES ON THE EUCALYPTUS.

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OF CHICAGO, ILL.

The Eucalyptus tree is a native of Australia and Tasmania, where it forms large forests. There are about 140 species described, but they vary extremely, different kinds of leaves being produced on the same tree, thus presenting distinct specific characters, and varying also in the nature of their barks.

In Tasmania and Gippsland Victoria, they grow to an immense height, often exceeding 400 feet. Their naked and branchless stems of a dirty white color look like natural columns. These are often blackened by the fires of the natives or wrung by the settler's axe, when they afford a grand but dismal spectacle, as one speeds along in the train; in some districts square miles of country is passed in which the forests have been wrung preparatory to settlement, and in some cases for no obvious reason, as the land is unfit for occupation and there stand those former monarchs of the forest like giant skeletons, sapless, lifeless looking, dismal and forlorn in the midst oftentimes, of a luxuriant undergrowth.

The trees are named usually according to the nature of their bark, which they shed instead of their leaves, such as Stringy Bark (*E. Obliqua*), Iron Bark (*E. Sideranylon*), Blue Gum (*E. Globulus*), Peppermint tree (*E. Amygdalina*).

The wood of some is very hard and durable, and so heavy as to sink in water. Many yield a kind of resin or gum, such as *E. Resinifera* and *E. Amygdalina*. A volatile oil of wonderful medicinal qualities is also produced from the leaves of various kinds but more especially from that known as the *E. Amygdalina* which is the most productive, and yields nine-tenths of the oil of commerce, though not always placed in the market under its own name.

This arises from a certain amount of notoriety gained for the *E. Globulus* abroad owing to the fact that it is the easiest of the species to acclimatize. As a matter of fact, however, there is scarcely any *E. Globulus* distilled in Australia. *E. Maunifera* yields sweet secretions analagous to manna. *E. Gunnii* furnishes a liquid that ferments and forms a kind of beer. They all produce abundance of seed,

which vegetates freely and becomes naturalized in various countries.

THE GIANT EUCALYPTUS TREE.

The *E. Amygdalina* or Giant Eucalyptus, called "Waugara" by the natives, is also known as the Peppermint tree. This is one of the most remarkable and important of all the plants in the whole creation.

Viewed in its marvelous height when standing forth in its fullest development on the slopes or within the glens of mountain forests it represents probably the tallest of all the trees of the globe. Regarded as a hard wood tree of rapid growth it ranks foremost, and contemplated in respect to its yield of volatile oil from its copious foliage it is unsurpassed and perhaps unequalled by any tree in the world. These qualities have made it become generally known and much through the exertions of Baron Von Mueller, this tree is now being introduced abroad with good results in countries neither subject to severe frost or intense moist heat. It assumes under different climatic and geologic conditions, various forms. Thus, in the ravines of the cooler ranges it attains its greater height, combined with a perfect straightness of stem, while the bark strips so completely as to render the huge stem quite smooth and almost white.

In the more open country it is much smaller. Under these conditions it is called a "Peppermint Tree" in Victoria and Tasmania, and a "Messmate Tree" in New South Wales.

In Victoria this tree often exceeds 400 feet in height. Such trees are found on the Black Spur, Upper Yarra Yarra, and Upper Goulbourn. A fallen tree on the Dandenong Ranges measured 420 feet. The length of the stem up to the first branch was 295 feet. The diameter of the stem where it was broken 365 feet from the root was three feet.

A still thicker tree in the same locality measured 53 feet in circumference three feet from the ground.

A tree near Mount Wellington, Tasmania, has been found which measured 12 feet in diameter, 220 feet from the ground. Another tree was found 130 feet in circumference at the base. Within a square mile 100 trees could be counted with a circumference of at least 40 feet. At the foot of Mount Baw Baw, Victoria, is found the highest of the giant trees of Australia. This monster is 471 feet high, and another on the Cape Otway ranges is 415 feet in height. The final height is sometimes attained by a single branch pushing skyward.

It is a grand picture to see a mass of enormous tall trees of this kind with stems of mast-like straightness and clear whiteness so close together in the forest as to allow them space only towards the summit to send their scanty branches and sparse foliage to the free light.

The distillation of the oil was first initiated by Baron Von Mueller. *E. Amygdalina* yields more oil than any of the other varieties, and is therefore almost solely employed for the purposes of distillation. It is also one of the best for subduing malarious effluvia in fever regions, although it does not grow abroad quite so well or quickly as *E. Globulus*.

The respective hygienic value of various trees may to some extent be judged by the percentage of oil in their leaves as stated below.

	Per cent. of Oil.
<i>E. Amygdalina</i>	3.313
<i>E. Oleosa</i>	1.250

	Per cent. of Oil.
E. Leucoxyton	1.060
E. Goniocalyx914
E. Globulus719

The lesser quantity of oil in E. Globulus is compensated for by the vigor of its growth, and early copiousness of its foliage. It readily adapts itself to other climates and hence abroad nearly all varieties of the oil are known as Globulus. During the last twenty years the Blue Gum has come into high repute as a sanitary tree. A high authority states that the sewage system of large towns in warm climes would be simplified if each house had the ever green gum tree in the back yard. The disinfecting and deodorizing virtues of the tree are unquestionable.

Flesh of any kind is as well preserved by eucalyptus as by creosote, while beef sprinkled with it will dry hard without putrefaction. It is fatal to bacteria and other microorganisms. It may be injected into the veins and arteries of cadavers for purposes of preservation. It is also a good admixture in dressing gangrene.

SOCIETY PROCEEDINGS.

American Electro-Therapeutic Association.

Second Annual Meeting, held in New York, October 4, 5 and 6, 1892.

WILLIAM J. MORTON, M.D., PREST.

FIRST DAY, OCTOBER 4—MORNING SESSION.

(Continued from page 48.)

2. *Electrolysis.* By this term is meant not alone the products of chemical decomposition at the electrodes but also the action of the current in its intrapolar course. There can be no doubt that every current, however small, acts upon the tissue included between the electrodes. In the first place there would exist no current, no conduction, unless the electricity moved *with* the atoms of matter and not through and among them. This is the essential feature of electrolytic conduction as in the fluids and semi-fluids of the body. Therefore, the atoms move as long as a current passes.

Again, the phenomenon of internal polarization and counter electromotive force (as high as one-fifth of a volt) demonstrates the intrapolar activity of the continuous current. The effect of this action upon a tissue, for instance a muscle, is proven to be a great diminution of its excitability and a profound alteration in its structure, microscopically demonstrable.

3. *Cataphoresis.* The fluids of the human body, varying according to their electrical resistance, move with the flow of the current from the positive to the negative pole.

Electrolysis, chemically and cataphoresis mechanically alter the amounts and distribution of that very small percentage of salts essential to the nutrition and function of parts of the organism upon which they act and thus produce tissue changes, as in tumors and exudations.

4. *Vaso motor effects,* are too familiar to more than require mention.

Further objective evidence might be adduced such as the important action of electricity upon the pulse, upon the temperature and upon the secretion of urea and other end-products of metabolism.

Again, the evidence of clinical observation is of great weight.

But the time at my disposal and the limits of your

patience, forbid the further pursuit of this train of thought. The field is too broad a one for this brief treatment. I would like to have referred to the medical possibilities of electricity in its relations to microbes and microbe chemical products; to the recent attack upon electro-therapy as upon all therapy founded upon that recognized therapeutic measure known as "suggestion," but, as I have said, my time is too short and I will content myself with a mere reference to a line of work which lies before us.

Certain directions of investigation point to a field where electricity may play an important rôle in the cure of disease. To-day much attention is divided between an organization the most complex—the nervous system and one most simple—the animal cell. The former has long held sway as the great controller of those functional processes incident to the life and the activity of the organism, but the latter is found to possess distinctive capacities of its own which would suggest that in all that relates to the performance of vital functions it could act independently of the influence of the nerves. The capacity of an amœba to select nutrition appropriate to itself, of an intestinal epithelial cell to pick out fat globules to the exclusion of other material and of a leucocyte to attack and destroy a microbe are examples of this independent action. The natural history of animal cell life and the possibility of its modification by electricity is an inviting field for study. If the leucocytes in a living being may be anesthetized by chloral so that they are unable to do their work they may likewise be exhausted or revived by the electric stimulus. And what is true of the leucocyte is true of other animal cells, if not all, which go to constitute our several tissues. Who shall say that the primary impulse of a nervous centre is not initiated by a capacity in the nerve cell as individual as that exercised by the amœba, the epithelial cell or the leucocyte. Indeed, if this initiative capacity to perform certain work is not inherent to the cells of the nervous system we must retreat to an immaterial principle underlying the phenomena of nervous action and hypothesize a sort of metaphysical *nervi nervorum*. It is then to an effect upon the life history of the cells involved in a given morbid process that we may look to for well known remarkable effects of electricity upon nutrition and a consequent modification of the processes of disease.

It is not improbable that a final field of contest in the cure of disease is between the physical phenomena we term electric and the chemico-biological processes of metabolism exhibited by the animal cell—between electricity on the one hand, which in the human body, by electrolytic conduction, becomes a chemical process and the chemical processes on the other hand, which constitute life in the organism—chemistry against or in conjunction with chemistry. From this point of view, much of electro-therapy becomes cellular therapy, in which electricity is the active agency in producing results which in general we term nutritional; and the explanation of the cure of curable diseases is to be found in the tendency of palliation and cure to be measured by the degree of nutritive improvement effected. The electro-therapy of the future must include acute as well as chronic diseases. Paradoxically, we may put the statement, cure the patient's body and we cure his disease. It is upon this great and broad general principle and not solely upon specific local effects that I believe the future success and position of electricity in medicine must be based. May we not term this process electro-cellular therapy?

REPORT OF THE COMMITTEE ON STANDARD COILS.

As the Committee had been unable to formulate a report, the members were asked to express their individual opinions.